



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/466,961      | 12/20/1999  | YOUN GYOUNG CHANG    | 8733.20050          | 1786             |

30827 7590 02/25/2003

MCKENNA LONG & ALDRIDGE LLP  
1900 K STREET, NW  
WASHINGTON, DC 20006

EXAMINER

BROCK II, PAUL E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 02/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/466,961 | <b>Applicant(s)</b><br>CHANG ET AL. |  |
|                              | <b>Examiner</b><br>Paul E Brock II   | <b>Art Unit</b><br>2815             |  |

-- Th MAILING DATE of this communication appears on the cover sheet with the correspond nc address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3,4,9,15,17,18 and 21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,9,15,17,18 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 31 August 2001 is: a) ☒ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Claim Objections*

1. Claim 21 is objected to because of the following informalities: it is not clear what is meant by parts of the claim being bracketed as it is presented in amendment D filed December 3, 2002. Because claim 21 is a new claim and not amended, the brackets will be treated as being non-existent. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bang in view of the applicant's admitted prior art.

With regard to claim 1, Bang discloses in figures 2b and 5g a switching TFT controlling a release of stored charges, the switching TFT having a gate electrode (11), an insulating layer (12) on the gate electrode, an active layer (13) on the insulating layer, an ohmic contact layer (15) on the active layer, and dual layered source and drain electrodes that are each comprised of a transparent conductive material (16 and 40) that extends over and contacts the ohmic contact

Art Unit: 2815

layer, and a metal material (17 and 18) that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer. Bang is silent to a sensor TFT and a storage capacitor. The applicant's admitted prior art discloses in figure 1; page 2, lines 10 – 16; and page 3, lines 7 – 9 a sensor thin film transistor (TFT) (C) generating optical current. The applicant's admitted prior art further discloses in figure 1 a storage capacitor storing charges of the optical current generated in the sensor thin film transistor. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the sensor tft and the storage capacitor of the applicant's admitted prior art in the method of Bang in order to detect an optical image using well understood thin film transistors and capacitors as stated by the applicant's admitted prior art on page 2, lines 10 – 16.

With regard to claim 4, Bang discloses in column 6, lines 19 – 21 that the transparent conducting material is indium tin oxide.

With regard to claim 21, Bang discloses in figures 2b and 5g a switching TFT for selectively controlling a release of stored charges, the switching TFT having a gate electrode (11) on a first surface of a transparent substrate (100), an insulating layer (12) on the gate electrode, an active layer (13) on the insulating layer, an ohmic contact layer (15) on the active layer, and dual layered source and drain electrodes that are each comprised of a transparent conductive material (16 and 40) that extends over and contacts the ohmic contact layer, and a metal material (17 and 18) that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer. Bang discloses in figures 2b and 5g wherein the gate electrode blocks light passed by the first surface from reaching the active layer, and wherein the ohmic contact layer rests on the active layer.

Art Unit: 2815

Bang is silent to a sensor TFT and a storage capacitor. The applicant's admitted prior art discloses in figure 1; page 2, lines 10 – 16; and page 3, lines 7 – 9 a sensor thin film transistor (TFT) (C) generating optical current. The applicant's admitted prior art further discloses in figure 1 a storage capacitor storing charges of the optical current generated in the sensor thin film transistor. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the sensor TFT and the storage capacitor of the applicant's admitted prior art in the method of Bang in order to detect an optical image using well understood thin film transistors and capacitors as stated by the applicant's admitted prior art on page 2, lines 10 – 16.

4. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bang and the applicant's admitted prior art as applied to claims 1 above, and further in view of den Boer et al. (USPAT 5656824, den Boer).

Bang and the applicant's admitted prior art are silent to what material comprises the metal for the dual layered source and drain regions. den Boer teaches in figure 2; column 5, line 50; and column 7, lines 32 – 40 a substantially non-transparent metal layer (40) of chrome for a dual layer source electrode. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use non-transparent chrome layer of den Boer as the metal material in the dual layered electrodes of the applicant's admitted prior art and Bang in order to use a known metal whose processing is well understood in the art as taught by den Boer in column 7, lines 32 – 50.

Art Unit: 2815

5. Claims 15, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bang in view of the applicant's admitted prior art, and den Boer.

With regard to claim 15, Bang discloses in figures 2b and 5g a switching TFT. Bang discloses in figures 2b and 5g a gate electrode (11) on a transparent substrate (100). Bang discloses in figures 2b and 5g an insulating layer (12) over the gate electrode. Bang discloses in figures 2b and 5g a semiconductor layer on the insulating layer and adjacent the gate electrode, wherein the semiconductor layer includes an active layer (13) and an ohmic contact layer (15). Bang discloses in figures 2b and 5g spaced apart first (16 and 17) and second (40 and 18) switching electrodes on the semiconductor layer that define a channel region, wherein the second switching electrode electrically contacts the contact layer. Bang discloses in figures 2b and 5g wherein the second switching electrode is a dual layer structure comprised of a transparent conducting layer (40) that is in contact with the ohmic contact layer and a metal layer (18) that extends over the transparent conductive material and that wraps around an end of the transparent conductive material so as to contact the ohmic contact layer. Bang is silent to a sensor TFT and a storage capacitor. The applicant's admitted prior art discloses in figure 1; page 2, lines 10 – 16; and page 3, lines 7 – 9 a sensor thin film transistor (TFT) (C) having a gate electrode (11) and spaced apart first (27a) and second (27b) sensor electrodes. The applicant's admitted prior art further discloses in figure 1 a storage capacitor having a first storage electrode (13) and a second storage electrode (29), wherein the second storage electrode of the storage capacitor connects to the first sensor electrode and to a second switching electrode (31b). It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the sensor TFT and the storage capacitor of the applicant's admitted prior art in the method of Bang

Art Unit: 2815

in order to detect an optical image using well understood thin film transistors and capacitors as stated by the applicant's admitted prior art on page 2, lines 10 – 16. Bang and the applicant's admitted prior art are silent to what material comprises the metal for the dual layered electrode. den Boer teaches in figure 2; column 5, line 50; and column 7, lines 32 – 40 a non-transparent metal layer (40) of chrome for a dual layer electrode. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use non-transparent chrome layer of den Boer as the metal material in the dual layered electrode of the applicant's admitted prior art and Bang in order to use a known metal whose processing is well understood in the art as taught by den Boer in column 7, lines 32 – 50.

With regard to claim 17, Bang teaches in figures 2b and 5g wherein the transparent conducting layer contacts the side of the active layer.

6. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bang in view of den Boer.

With regard to claim 18, Bang discloses in figures 2b and 5 a gate electrode (11) on a substrate (100). Bang discloses in figures 2b and 5 an insulating layer (12) over the gate electrode. Bang discloses in figures 2b and 5 a semiconductor layer on the insulating layer and adjacent the gate electrode, wherein the semiconductor layer includes an active layer (13) and a contact layer (15). Bang discloses in figures 2b and 5 spaced apart first (16 and 17) and second (40 and 18) electrodes that electrically contact the contact layer so as to define a channel region. Bang discloses in figures 2b and 5 wherein the second electrode of the TFT is a dual layer structure comprised of a transparent conducting layer (40) that electrically contacts the contact

Art Unit: 2815

layer and a metal layer (18) that is disposed over the transparent conducting layer, wherein the metal layer extends over an end of the transparent conducting layer to electrically contact the contact layer. Bang is silent to what material comprises the metal for the dual layered source and drain regions. den Boer teaches in figure 2; column 5, line 50; and column 7, lines 32 – 40 a non-transparent metal layer (40) of chrome for a dual layer source electrode. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use non-transparent metal layer of den Boer as the metal material in the dual layered electrodes of Bang in order to use a known metal whose processing is well understood in the art as taught by den Boer in column 7, lines 32 – 50.

***Response to Arguments***

7. Applicant's arguments with respect to claim 18 have been considered but are moot in view of the new ground(s) of rejection.



8. Applicant's arguments filed December 3, 2002 have been fully considered but they are not persuasive.

9. With regard to the applicant's arguments that "None of the cited references including Bang and the Related Art shown in the application, singly or in combination, teaches or suggests at least these features ('a sensor thin film transistor (TFT) generating optical current' and 'a switching TFT controlling a release of the stored charges, the switching TFT having a gate

Art Unit: 2815

electrode, an insulating layer on the gate electrode, an active layer on the insulating layer, an ohmic contact layer on the active layer, and dual layered source and drain electrodes that are each comprised of a transparent conductive material that extends over and contacts the ohmic contact layer, and a metal material that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer’),” it should be noted that all of these limitations are taught by the references as cited in the above rejection. For example: the applicant’s admitted prior art discloses in figure 1; page 2, lines 10 – 16; and page 3, lines 7 – 9 “a sensor thin film transistor (TFT) generating optical current.” Also, Bang discloses in figures 2b and 5g a switching TFT controlling a release of stored charges, the switching TFT having a gate electrode (11), an insulating layer (12) on the gate electrode, an active layer (13) on the insulating layer, an ohmic contact layer (15) on the active layer, and dual layered source and drain electrodes that are each comprised of a transparent conductive material (16 and 40) that extends over and contacts the ohmic contact layer, and a metal material (17 and 18) that extends over the transparent conductive material and that wraps around an end of the transparent conductive material to contact the ohmic contact layer. Therefore, the arguments are not persuasive, and the rejection is proper.

10. In response to applicant's argument that the prior art used for the rejection does not teach “a switching TFT controlling a release of the stored charges”, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim

drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Therefore, the arguments are not persuasive, and the rejection is proper.

11. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). For example, the applicant's arguments that "None of the cited references... teaches or suggests at least this feature ('a sensor TFT having a gate electrode and spaced apart first and second sensor electrodes' and 'a switching TFT')," it should be noted that these features are each individually addressed by at least one of the combined references of record. Therefore, the arguments are not persuasive, and the rejection is proper.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul E Brock II whose telephone number is (703)308-6236. The examiner can normally be reached on 8:30 AM-5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703)308-1690. The fax phone numbers for the

Art Unit: 2815

organization where this application or proceeding is assigned are (703)308-7722 for regular communications and (703)308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Paul E Brock II  
February 19, 2003



**EDDIE LEE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**